What is claimed is:

1. A method and apparatus for the on-line monitoring of oil, gas, and water holdup. The apparatus comprises a series of fiber optical sensors that are installed into the transferring pipe of the crude oil. The signals of oil/water/gas ratios are obtained from the fiber optical sensor. The signals are transmitted to the micro-processing unit for pattern discrimination. A computer for statistics, storage, recording, inquiring, refurbishing, data feedback, and an alarm treats the signals of percentages of oil, water, and gas at the unit of time from the above system.
2. From claim 1, it can be acknowledged that the fiber optical sensors are installed into the exiting pipes of each oil well. It should be noted that a system can include several pattern discriminations, i.e. one combination box of pattern discriminations is used for a single oil well and has the capability to share with several wells. When the statistical system is shared, several sensors can be connected to form an intelligent managing network to maintain oil, water, and gas holdup. The network can support a series of oil wells or a single well.
3. In order to achieve pollution resistant goals, high levels of sensitivity, and high resolution, an Au or Ni nano-material layer with the thickness of 4-10nm is coated on the end of the probe on the fiber optical sensor.